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March 31, 1995

VIA HAND DELIVERY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: MM Docket No. 95-17
Amendment of Parts 73 and 74 of Commission's Rules to
More Effectively Protect Radio Astronomy Activity on Ch. 37

Dear Mr. Caton:

Transmitted herewith, on behalf of Cornell University and the National Astronomy and Ionosphere Center are an original and four copies of their Comments in the above-referenced proceeding and in response to Commission's *Notice of Proposed Rule Making*, FCC 95-35, released February 21, 1995.

Should there be any questions concerning this matter, please contact the undersigned counsel.

Very truly yours,

Paul J. Feldman
Counsel for
Cornell University and
National Astronomy & Ionosphere Center

pf:ik
Enclosures

BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 73 and 74 of	)	MM Docket No. 95-17
the Commission's Rules to More	)	
Effectively Protect Radio	)	
Astronomy Activity on Channel 37	)	

COMMENTS OF
CORNELL UNIVERSITY AND
THE NATIONAL ASTRONOMY AND IONOSPHERE CENTER

Cornell University ("Cornell") and the National Astronomy and Ionosphere Center ("NAIC"), which operates the Arecibo Observatory ("the Observatory") near Arecibo, Puerto Rico under the terms of a cooperative agreement with the National Science Foundation, hereby submit their comments in response to the Commission's Notice of Proposed Rule Making, FCC 95-35, released February 21, 1995 in the above-captioned proceeding ("NPRM").

I. Introduction

Cornell thanks the Commission for a thoughtful reaction to the Petition for Rule Making of the Committee on Radio Frequencies ("CORF") on behalf of the US radio astronomy community. However, Cornell is concerned that the proposed field strength limit proposed by the Commission does not provide as much protection as the adjacent channel separation rules favored by CORF.

In the following Cornell will particularly comment on the adequacy of the proposed Rule Making with regard to protecting observations in the 6 MHz band of Channel 37 at the Arecibo Observatory. Cornell has particular interest in the use of Channel 37 because the $25M Gregorian Upgrade presently in progress at the Arecibo Observatory will optimize this band for scientific research at Arecibo. Cor-

nell is concerned that the largest radio telescope in the world, at Arecibo, will experience adjacent channel emissions from allocations in both Channels 36 and 38.

II. The Proposed Rule Making Provides Inadequate Protection for Radio Astronomy in Channel 37

The Petition for Rule Making submitted by CORF had the aim of providing improved protection for radio astronomical observatories within the framework of Footnote US74. Footnote US74 says in part "the radio astronomy service shall be protected from extraband radiation only to the extent that such radiation exceeds the level which would be present if the offending (adjacent channel) station were operating in compliance with the technical standards or criteria applicable to the service in which it operates". Cornell believes that this means that a radio observatory operating within TV Channel 37 will optimally receive the same protection as a TV station operating in this band, and that adjacent channels should operate within the rules as if the radio observatory were a TV operator. However, the Commission chose to take a narrower view that a radio observatory is not subject to the same protection as a TV station because there is no TV station. As a result the Commission chooses not to apply the limitations on adjacent channel separation of Rule 73.610(c) with regard to radio astronomy observatories.

Cornell finds that the Commission's interpretation of US74 provides inadequate protection to US radio astronomy observatories. The FCC rules at section 74.705(b)(1) prevent low power TV stations from locating within the Grade B contours of a full power station in an adjacent channel. Therefore, any TV station in any of the fifty states would only need to tolerate low power stations at distances equal or larger than 87.7 km. However, under the proposed rules low power TV stations in both adjacent channels can locate close to an observatory and produce signal levels equal to those of fictitious full power stations at a separation distance of 87.7 km. Since the goal of the NPRM is to provide interference protection to the radio astronomy observatories, allowing low power TV stations within this 87.7 km radius unnecessarily allows higher field strenths in adjacent channels at the observatories than would be allowed for a TV station. This aspect of the proposed rule degrades the equivalent protection status to the radio astronomy observatory facilitated by Footnote US74.

Cornell does not believe that harmful interference thresholds[1] as presented by

ITU-R RA.769 can be reached for the 604-610 MHz band or that this protection is possible within the framework of a rule based on US74. However, the Commission's interpretation of the Rules and the present NPRM may prevent the radio astronomy observatories from receiving even the minimal protection provided TV operators from one another.

Cornell urges the Commission to reconsider its stance on the interpretation of US74 and to apply the separation rules for television stations in section 73.610(c) to the observatories in proposed section 73.613(b). Treating the radio astronomy observatories as TV stations are treated would give a consistency, uniformity, and fairness to the Rules, while the present NPRM would create more exceptions to the existing rules.

III. Channels 36 and 38 in Puerto Rico

Cornell appreciates that the methodology proposed in the NPRM gives added flexibility to the Commission and the broadcasters. However, only four full power stations within the present allotment tables in the United States are presently affected by a ruling on Channel 37. Two of these stations are in the vicinity of Arecibo, Puerto Rico. Unfortunately, the NPRM does little to alleviate the out-of-band emissions from Channels 36 and 38 at the Arecibo Observatory. The present facilities of station WJWN-TV, Channel 38, San Sebastian, PR, produce field strength levels at Arecibo of 3 dBu above the threshold considered in the NPRM. Although Cornell and the Arecibo Observatory need to live with this situation, Cornell supports the Commission's proposal to freeze the power of the station WJWN-TV to the ERP levels currently used.

On the other hand, the NPRM states (at note 7) that station WDWL-TV, Channel 36, Bayamon, PR, would be allowed to raise its power level at the Observatory by 18 dB in the future. Such increases in power would be very harmful to operations in the 604-610 MHz band at the Observatory. For reasons discussed above, Cornell requests that the field strength for the WDWL-TV signal at Arecibo be frozen at

[1]The field strength limit for the carrier in adjacent channels is 64 dBu or -82 dB(W/m^2) and the standard limit on spurious (intermodulation product) emissions from the Rules at 73.687(e)(1) is 60 dBc below the visual carrier or -142 dB(W/m^2). Such levels of spurious emission are 43 dB above the harmful interference thresholds for radio astronomy continuum observations in the 604-610 MHz band as presented by ITU-R RA.769.

the present level. Considering that the target area for this station is the San Juan metropolitan area, which is on the opposite side of Bayamon from Arecibo, Cornell requests that future power increases for station WDWL-TV, if any, be achieved with directional antennas directed away from the Observatory.

IV. Conclusions

Cornell is pleased that the Commission has responded to CORF's Petition for Rule Making on the status of radio astronomy operations in TV Channel 37. The current Gregorian Upgrade at Arecibo Observatory will facilitate effective use of the 604-610 MHz band in a unique manner among the world's radio observatories. In order to protect these efforts, Cornell requests the Commission to change its stance on its interpretation of Footnote US74 and provide the US radio observatories the same protection they would be accorded as TV stations. Considering that Arecibo Observatory is handicapped by two adjacent stations in the allotment tables, Cornell also requests that the field strength of the present Channel 36 be fixed at its present level at the Arecibo Observatory.

Respectfully submitted,

CORNELL UNIVERSITY

By: 

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